CLAIMS

1. A stimuli-responsive polymer hydrogel capable of gelating as a result of absorbing and swelling with water and capable of changing its degree of swelling and/or volume in response to a stimulus, wherein the polymer hydrogel comprises a water-insoluble polymer as a phase separation structure.

2. The stimuli-responsive polymer hydrogel according to Claim 1, wherein the water-insoluble polymer is a polymer comprising no cross-linking point.

3. The stimuli-responsive polymer hydrogel according to Claim 1, wherein the water-insoluble polymer has a glass transition temperature lower than the working temperature of the stimuli-responsive polymer hydrogel, and wherein the water-insoluble polymer stands a rubbery state at the working temperature.

4. The stimuli-responsive polymer hydrogel according to Claim 1, wherein the stimulus is a change in pH, and wherein the stimuli-responsive polymer hydrogel changes its degree of swelling and/or volume in response to the pH change.

5. A method for producing a stimuli-responsive polymer

hydrogel, comprising the steps of:

carrying out the polymerization of a monomer having a stimuli-responsive functional group with a crosslinker in a solution of a water-insoluble polymer in an organic solvent to yield an organogel comprising the water-insoluble polymer and a stimuli-responsive polymer;

subjecting the organogel to one treatment selected from drying under reduced pressure, drying by heating, and drying by heating under reduced pressure to remove the organic solvent to thereby yield a dried gel; and

allowing the dried gel to swell with water to thereby yield a hydrogel.

6. A method for producing a stimuli-responsive hydrogel, comprising the steps of carrying out the polymerization of a monomer having a stimuli-responsive functional group with a crosslinker in a solution of a water-insoluble polymer in an organic solvent to yield an organogel comprising the water-insoluble polymer and a stimuli-responsive polymer; and immersing the organogel in water or a water-containing liquid mixture to thereby yield a hydrogel.

7. A polymer actuator comprising a stimuli-responsive polymer hydrogel capable of gelating as a result of absorbing and swelling with water and capable of changing its degree of swelling and/or

volume in response to a stimulus, the stimuli-responsive polymer hydrogel comprising a water-insoluble polymer as a phase separation structure.